UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/085,528 | 02/25/2002 | Mark W. Lambert | 31008.P037 | 9800 |

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| EXAMINER |
|---|
| SHARON, AYAL I |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2123 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 05/15/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

| | **Application No.** | **Applicant(s)** |
|---|---|---|
| **Office Action Summary** | 10/085,528 | LAMBERT ET AL. |
| | **Examiner** | **Art Unit** | |
| | Ayal I. Sharon | 2123 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on _08 March 2007_.

2a) ☐ This action is **FINAL**.  2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) _1-9,11-13 and 15-39_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-9,11-13 and 15-39_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _25 February 2002_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All  b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _3/8/07_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☒ Other: _See Continuation Sheet_.

Continuation of Attachment(s) 6). Other:  Requirement for Info Under 37 CFR 1.105.

# DETAILED ACTION

## *Introduction*

1. Claims 1-9, 11-13, and 15-39 of U.S. Application 10/085,528, originally filed on 02/25/2002, are currently pending. Claims 1, 12, 15, 23, 25, 36, and 37 have been amended in the amendment filed 3/8/07.

## *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/2007 has been entered.

3. Applicant's filing of an RCE is also a withdrawal from appeal. MPEP § 1215.01 states that "[p]rior to a decision by the Board, if an applicant wishes to withdraw an application from appeal and to reopen * prosecution of the application, applicant can file a request for continued examination (RCE) under 37 CFR 1.114, accompanied by a submission (i.e., a reply responsive within the meaning of 37 CFR 1.111 to the last outstanding Office action) and the RCE fee set forth under 37 CFR 1.17(e).

## Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 3/8/07 was filed on the

mailing date of the RCE on 3/8/07.  The submission is in compliance with the

provisions of 37 CFR 1.97.  Accordingly, the information disclosure statement is

being considered by the examiner.

## Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed
publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public
use or on sale in this country, more than one year prior to the date of application for patent in the United
States.

6. The prior art used for these rejections is as follows:

    a. The Feb.3, 2001 version of the official corporate website of D-cubed, Ltd.

of Cambridge, England, reads upon the claimed invention as stored in the

"Internet Wayback Machine".

(http://web.archive.org/web/20010201070800/http://www.d-cubed.co.uk)

D-cubed, Ltd. is the developer of the 2D Dimensional Constraint Manager

product. (Referred to as **"the D-cubed reference"**).

    b. D-Cubed, Ltd. The 2D DCM Manual, Version 4.2. January 2002. ("**2D**

**DCM Manual**").

7. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

8. **Claims 1-39 rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention.** The 2D Dimensional Constraint Manager available from D-cubed, Ltd. of Cambridge, England, reads upon the claimed invention.

9. Examiner has located a relevant published news article regarding the instant application. The article is:

> Zarrillo, Andrew. "Autodesk Licenses Constraint Management Technology." <u>Business Wire.</u> New York. Feb. 26, 1990. Sec.1, p.1. ("**Zarrillo**").

10. The press release teaches that Autodesk reached an agreement with D-cubed to license D-cubed's constraint manager, "DCM (dimensional constraint manager)."

11. Examiner notes that the date of the news article is Feb. 26, 1990, a full 12 years before the filing date of the instant application.

12. The specification of the instant application (see p.9, lines 13-21) teaches the following (emphasis added):

> Except for the teachings of the present invention incorporated in the pattern determination engine 108, the mechanical design application 100 is intended to represent a broad range of CAD software known in the art, including but not limited to Autodesk Inventor$^{TM}$, available from Autodesk, Inc. of San Rafael, California. Additionally, as alluded to earlier, the mechanical design application 100 may include parametric software components to provide parametric functionality, such as, but not limited to, **<u>2D Dimensional Constraint Manager available from D-cubed, Ltd. of Cambridge, England.</u>**

13. As detailed in the prior art rejections that follow, Examiner finds that the limitations of the claimed invention read on the functional capabilities of the "Dimensional Constraint Manager" product.

**14. Claims 1-39 are rejected under 35 U.S.C. 102(b) as being anticipated by the D-cubed reference.**

15. Claims in claim set 1 (claims 1-9, 11, and 34-35) are anticipated by the D-cubed reference. More specifically, the section of the D-cubed reference titled "What is variational design?", on the page titled "The 2D and 3D Dimensional Constraint Managers: Overview." The cited section teaches the following:

> In brief, variational techniques enable the end-user to specify and control their geometric models through the use of simple rules. Such rules frequently include dimensions and constraints. Dimensions, such as distances, angles and radii, have an easily understood interpretation. The meaning of constraints is less obvious. In fact they are simply rules that restrict, *i.e. constrain*, the behavior of the geometries in the model. Examples of constraints include parallelism, tangency and concentricity.

> To modify a model, the end-user simply specifies a change to the rules, such as a modified value for a dimension. The DCM then automatically re-calculates the locations of all the geometries affected by the new dimension value, whilst ensuring that their final locations are consistent with the previously applied dimensions and constraints. The end-user does not have to re-position the geometries manually to create the new configuration, hence their productivity is greatly enhanced.

Examiner finds that the claimed "boundary" is one of the "constraints" taught in the section recited above.

16. In addition, in regards to claim 2, Examiner finds that X and Y coordinates are inherently stored in 2-Dimensional CAD drawings.

17. In addition, in regards to claim 3, Examiner finds that minimum and maximum values correspond to the taught "constraints".

18. Claims in claim set 2 (claims 12-13, 15-22, and 36-37) and claim set 3 (claims

23-33 and 38-39) are rejected based on the same reasoning as the claims in

claim set 1 (claims 1-9, 11, and 34-35). Claim set 2 consists of apparatus claims,

and claim set 3 consists of article of manufacture claims that recite limitations

equivalent to those recited in the method claims of claim set 1, and which are

taught throughout the D-cubed reference.

19. **Claims 1-39 are rejected under 35 U.S.C. 102(a) as being anticipated by the**

**2D DCM Manual.**

20. In regards to Claim 1, the 2D DCM Manual teaches the following limitations:

> *1.       (Currently amended) A method comprising:*
> *receiving an input for the pattern comprising a plurality of features*
> *<u>included within a boundary of a CAD geometry piece</u> where a feature*
> *corresponds to a feature of the CAD geometry piece;*
>
> *receiving an indication of modification to the CAD geometry piece;*
>
> *automatically modifying the CAD geometry piece and its boundary*
> *based at least upon the received indication; and*
>
> *automatically maintaining continuous enclosure of the pattern within*
> *the boundary of the modified CAD geometry piece, including*
>
> *automatically modifying at least one of the pattern or the plurality of*
> *features to be continuously included within the boundary of the modified*
> *CAD geometry piece, based at least upon the modified CAD geometry*
> *piece and the received input.*

See 2D DCM Manual, especially Section 4.2.11 "Pattern Constraints",

which describes how a pattern constraint may be used in models containing

groups of geometries repeated in a regular manner. Sections 12.4 "Patterns" and

12.5 "Regular Polygons" describe the best way to add constraints onto groups of

patterned geometries, and the use of pattern constraints to make regular polygons.

Section 2.5.6.2 "Weighted Standard Solving Mode", the associated Fig.4, shows how a fixed geometry (a vertical line, which corresponds to claimed "boundary") and an unfixed geometry (a rectangle and a point) are solved when a modification of the geometry is received. This section does not discuss the claimed issue of maintaining the features on one side of the fixed line (which corresponds to the claimed "within the boundary"), but Section 2.4 "Chirality" does.

Section 2.4 "Chirality" defines "chirality" (see p.22) as "determin[ing] the way that a geometry is positioned relative to the geometries to which it is dimensioned." On p.22, the reference teaches that "[a] simple example which illustrates chirality is two circles which are dimensioned to be tangent to one another. They can either lie side by side or one inside the other." (Examiner notes that this is similar to the relationship between a boundary and the pattern it encloses.)

The reference proceeds to teach (p.22, same paragraph) that "[a]s mentioned above, unless instructed to do otherwise, the DCM will always evaluate a new configuration that has the same chirality as the original geometry." The reference then goes further and teaches (see p.23, emphasis added) that "[i]n some circumstances it is possible for an application to use the DCM so that it 'remembers' the chirality of a model while it is changed. This

allows an application **to move geometry without changing the chirality**. See

section 5.2 'Moving geometry and preserving chirality' for details." Examiner

notes that both sections 5.2 and 5.3 of the 2D DCM Manual teach steps for

preserving chirality.

Therefore, Examiner interprets that the 2D DCM Manual expressly

teaches the claimed limitations.

21. In regards to Claim 2, the D-cubed web site teaches the following limitations:

> 2.      (Original) The method of claim 1, wherein said receiving the input
> comprises receiving an input corresponding to an indication of a direction,
> the indication having an X-component and a Y-component.

(Examiner finds that X and Y coordinates are inherently stored in 2-Dimensional
CAD drawings)

22. In regards to Claim 3, the D-cubed web site and the 2D DCM Manual teach the
following limitations:

> 3.      (Currently amended) The method of claim 1, wherein:
> said receiving the input includes receiving a boundary value, the boundary
> value having at least one of a maximum value and a minimum value
> defining a maximum and a minimum, respectively, for a distance between
> at least one feature and the boundary; and

(Examiner finds that minimum and maximum values correspond to the taught
"constraints". See also Section 2.5.6.2 "Weighted Standard Solving Mode" of the
2D DCM Manual.)

> automatically modifying at least one of the pattern or the plurality of
> features includes maintaining a distance between the at least one feature
> and the boundary within the boundary value.

(See also Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM
Manual.)

23. In regards to Claim 4, the D-cubed web site and the 2D DCM Manual teach the
following limitations:

> 4.      (Original) The method of claim 1, wherein said receiving the indication of modification comprises receiving an indication of modification to a 2-D geometry piece parametrically defining the CAD geometry piece

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

24. In regards to Claim 5, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> 5.      (Original) The method of claim 4, wherein said receiving the modification to the geometry comprises receiving an indication of modification of a dimension of the 2-D geometry piece parametrically defining said CAD geometry piece.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

25. In regards to Claim 6, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> 6.      (Original) The method of claim 1, wherein said receiving the input comprises receiving an indication to optimize the pattern.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

26. In regards to Claim 7, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> 7.      (Original) .The method of claim 1, wherein said automatically modifying the CAD geometry piece comprises parametrically updating the CAD geometry piece.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

27. In regards to Claim 8, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> 8.      (Currently amended) The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises automatically determining what modification, if any, is necessary to one or more dimension of at least one of the plurality of features.

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

28. In regards to Claim 9, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> *9.      (Currently amended) The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises automatically determining what modification, if any, is necessary to an inter-feature distance between each of the plurality of features, and changing the inter-feature distance between at least one feature and an adjacent feature upon determining the modification is necessary.*

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

29. In regards to Claim 11, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> *11.      (Currently amended) The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features comprises:*
>
> > *automatically determining what modification, if any, is necessary to a first dimension in view of a determined modification to a second dimension, to maintain a relationship between said first and second dimensions, where the first dimension and the second dimension comprise first and second dimensions of each feature of the plurality of features, and*

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

> > *modifying at least one of the first dimension or the second dimension of each feature of the plurality of features.*

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

30. In regards to Claim 34, the D-cubed web site and the 2D DCM Manual teach the following limitations:

> *34.      (New) The method of claim 1, wherein said automatically modifying at least one of the pattern or the plurality of features includes removing one or more features from the pattern.*

(See Sections 2.51 to 2.5.6.6 of the 2D DCM Manual.)

31. In regards to Claim 35, the D-cubed web site and the 2D DCM Manual teach the
following limitations:

> *35.        (New) The method of claim 1, wherein said automatically modifying
> at least one of the pattern or the plurality of features includes adjusting a
> distance between at least one feature and the boundary such that the
> plurality of features are continuously included within the boundary.*

(See Section 2.5.6.2 "Weighted Standard Solving Mode" of the 2D DCM Manual.)

32. Claims in claim set 2 (claims 12-13, 15-22, and 36-37) and claim set 3 (claims
23-33 and 38-39) are rejected based on the same reasoning as the claims in
claim set 1 (claims 1-9, 11, and 34-35). Claim set 2 consists of apparatus claims,
and claim set 3 consists of article of manufacture claims that recite limitations
equivalent to those recited in the method claims of claim set 1, and which are
taught throughout the D-cubed web site.

### Response to Arguments

#### Oath/Declaration

33. Examiner has withdrawn the objection to the Oath/ Declaration in light of the IDS
filed on 3/8/07.

#### Claim Rejections - 35 USC § 102(b) – On Sale Bar

34. The on sale bar rejections have been maintained in light of the IDS filed 3/8/07.

35. The 12 year gap between the date of the Zarrillo press release and the prior art
submitted with IDS filed 3/8/07 raises the suspicion that the claimed features

existed in the on-sale product over a year before the filing date of the instant application.

36. The prior art submitted with IDS filed 3/8/07 predates the filing date of the instant application by only one month. While the newly submitted prior art by itself is not old enough to qualify as a basis for a 35 USC § 102(b) on-sale bar rejection, it does not refute the prima facie case of an on-sale bar rejection based on the Zarrillo press release.

37. A co-pending 35 USC § 1.105 accompanies this office action. Its purpose is to resolve this issue.

## *Claim Rejections - 35 USC §§ 102(a), (b) – Prior Art*

38. In light of the IDS filed 3/8/07, new prior art rejections based on the submitted art have been added.

39. The previously applied 35 USC § 102 rejections have been maintained, because even though the D-cubed reference does not expressly teach the phrase "automatically maintaining enclosure of a pattern within a boundary of a modified CAD geometry device", it does expressly teach the following:

> To modify a model, the end-user simply specifies a change to the rules, such as a modified value for a dimension. The DCM then automatically re-calculates the locations of all the geometries affected by the new dimension value, whilst ensuring that their final locations are consistent with the previously applied dimensions and constraints.

Examiner finds that the element of "ensuring that their final locations are consistent with the previously applied dimensions and constraints" anticipates the claimed limitation.

40. Examiner also notes that the previously applied 35 USC § 102(a) rejections have been changed to 35 USC § 102(b), because the filing date of the instant application is 2/25/2002, and the date of the relevant page of the D-cubed reference is 2/3/2001.

### Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

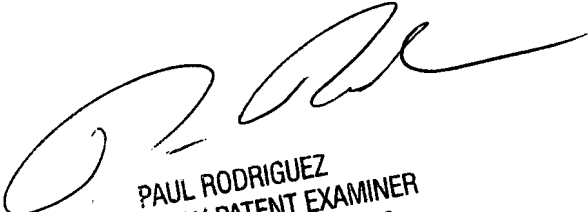USPTO
P.O. Box 1450
Alexandria, VA 22313-1450

or hand carried to:

USPTO
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application

or proceeding should be directed to the Tech Center 2100 Receptionist, whose

telephone number is (571) 272-2100.

Ayal I. Sharon
Art Unit 2123
May 11, 2007

PAUL RODRIGUEZ
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